



National Centers for Environmental Information (NCEI)

FINALLY! GOES - 16

W.F. Denig

National Oceanic and Atmospheric Administration (NOAA)

National Environmental Satellite, Data & Information Service (NESDIS)

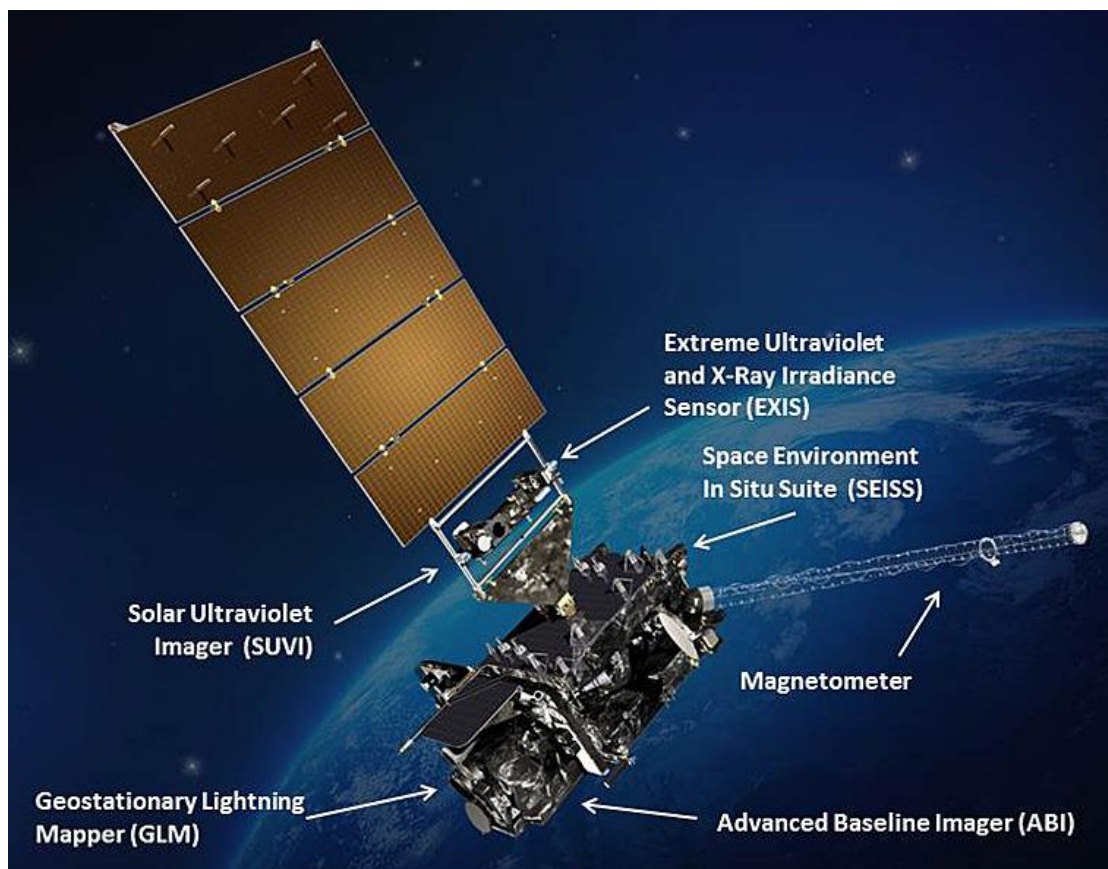
Boulder, Colorado

05 May 2017

GOES-16

Satellite Launch: 19 November 2016

4 of 6 Sensors are for Space Weather

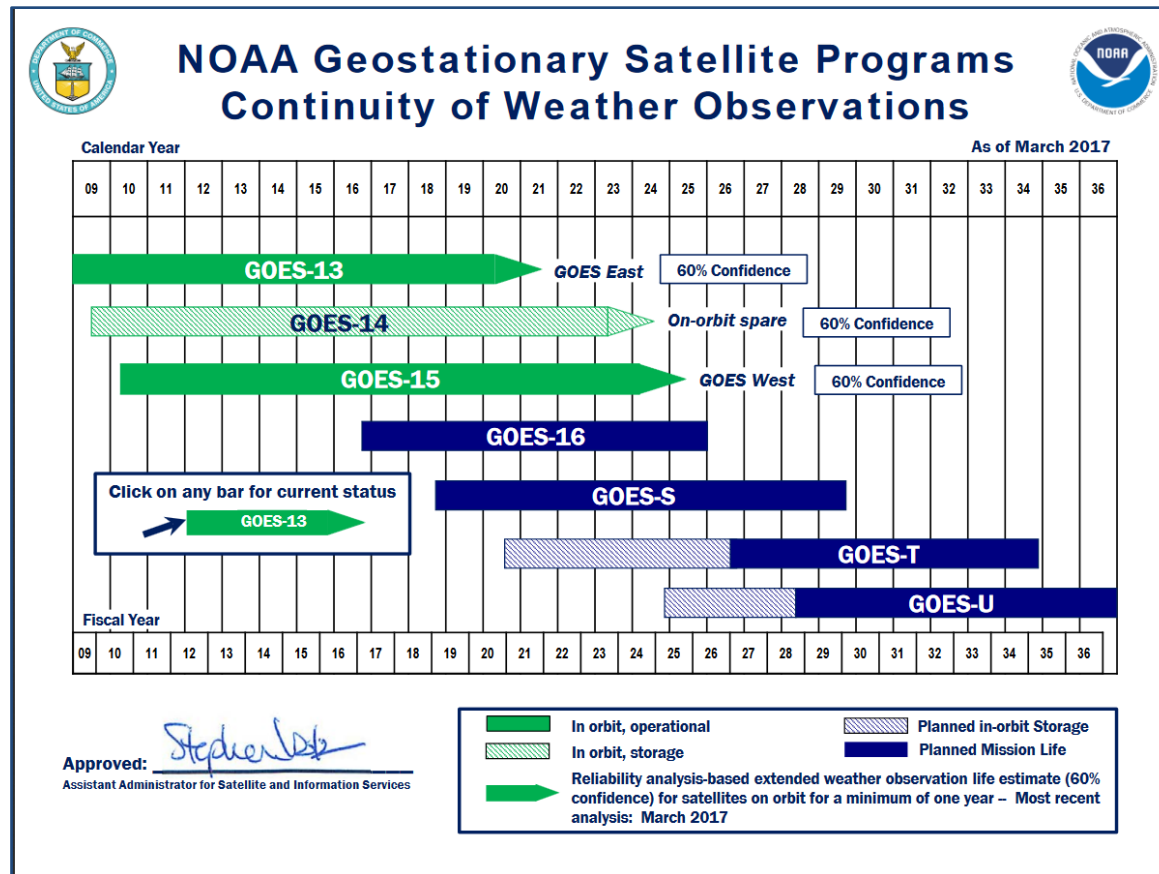




NOAA Flyout Chart

Operations Through 2036

GOES-16 is the first of the GOES-R satellites



Advanced Baseline Imager (ABI)

Key Performance Parameters



4

X

Improved spatial
resolution
(2 km IR vs. 4 km)

3

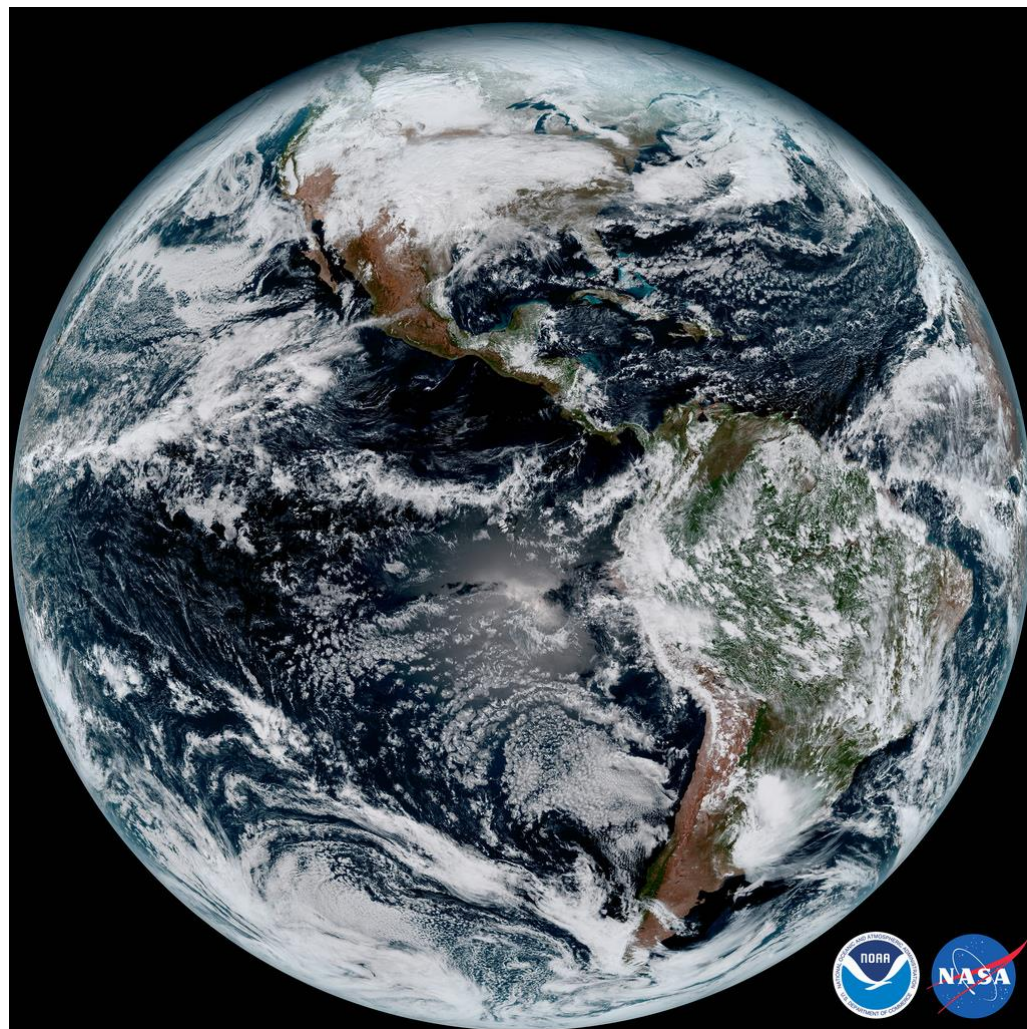
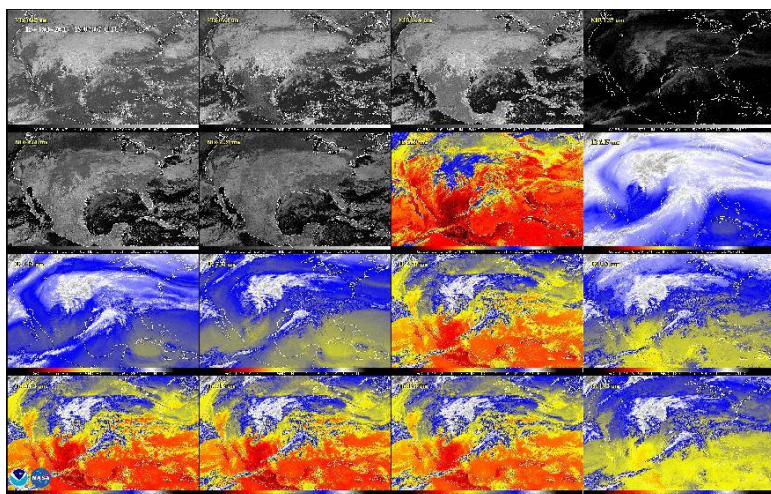
X

More spectral bands (16
on ABI vs. 5 on the
current imager)

5

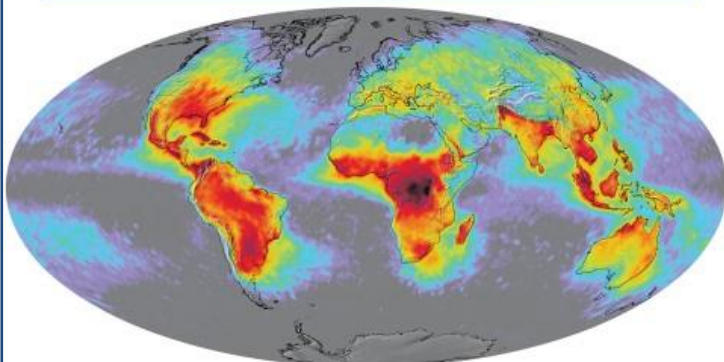
X

Faster coverage
(5-minute full disk vs.
25-minute)



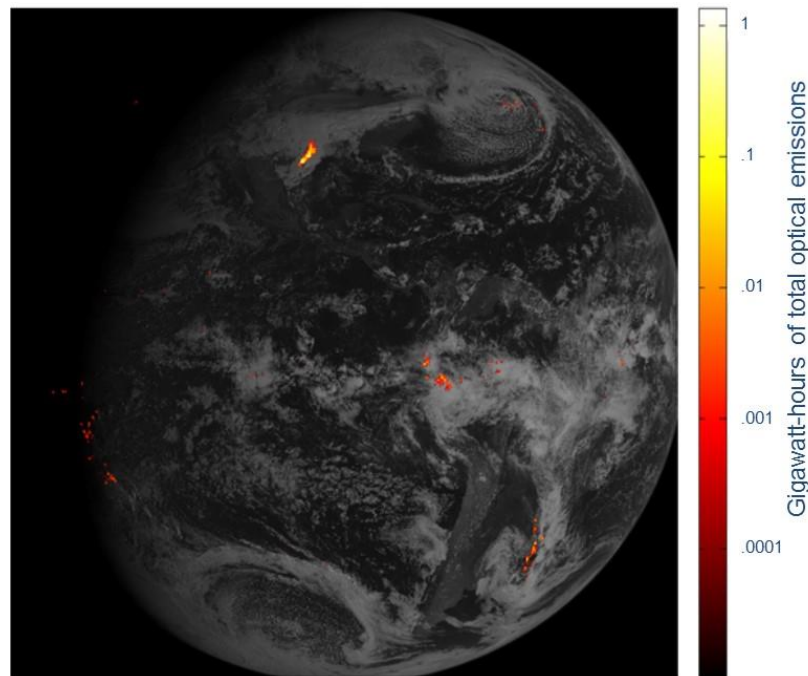
Global Lightning Mapper (GLM) *New Operational Capability at GEO*

Global Distribution of Lightning Activity



Goodman et al., 2007, Our Changing Planet: The View from Space, M. King, ed., Cambridge University Press

Mean annual global lightning flash rate (flashes $\text{km}^{-2} \text{yr}^{-1}$) derived from a combined 8 years from April 1995 to February 2003. (Data from the NASA OTD instrument on the OrbView-1 satellite and the LIS instrument on the TRMM satellite.)



What's a gigawatt?

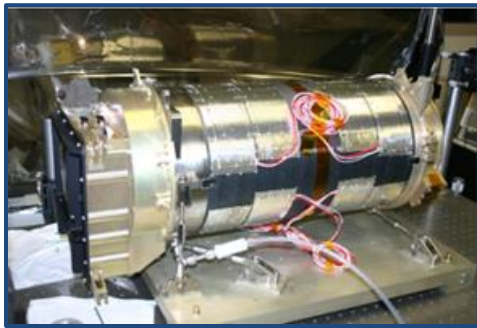
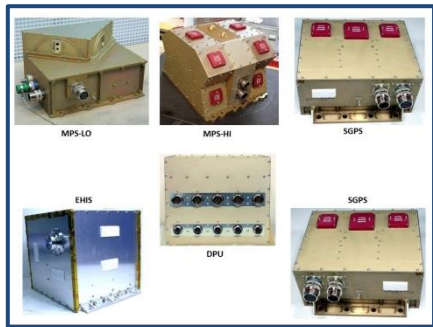
1.21
GIGAWATTS



Space Weather Sensors *Heritage & New Capabilities*

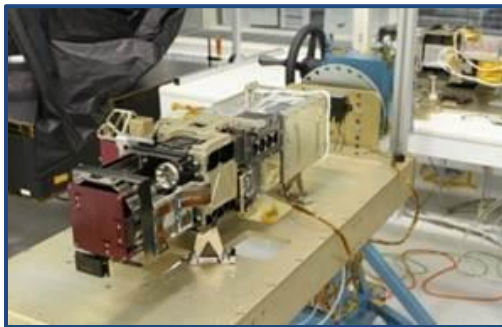
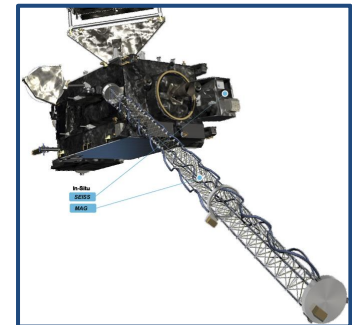
GOES-16

Space Environmental In-Situ Suite
(SEISS)



Solar Ultra-Violet Imager
(SUVI)

Magnetometer
MAG

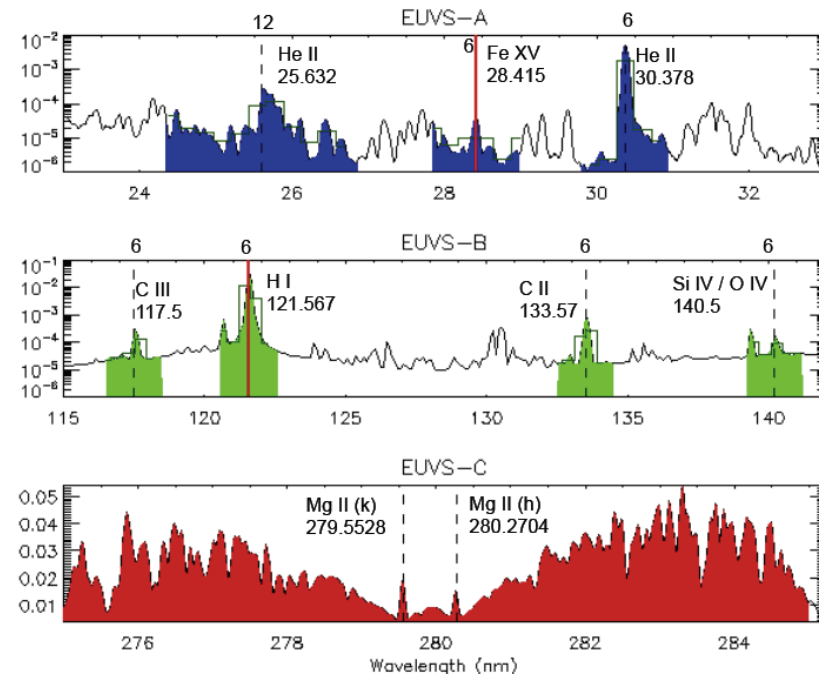
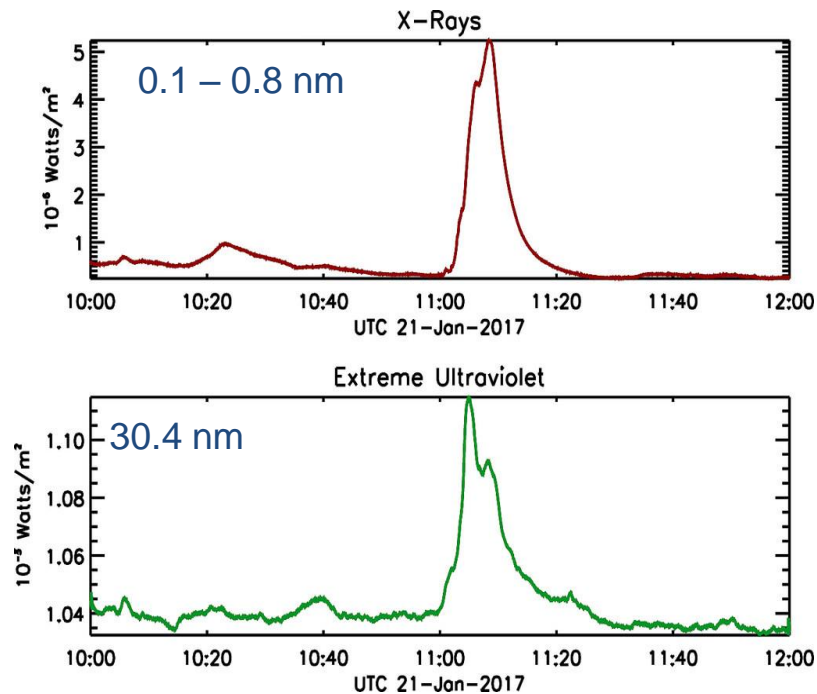


EUV and X-ray Irradiance Sensors
(EXIS XRS & EUVS)

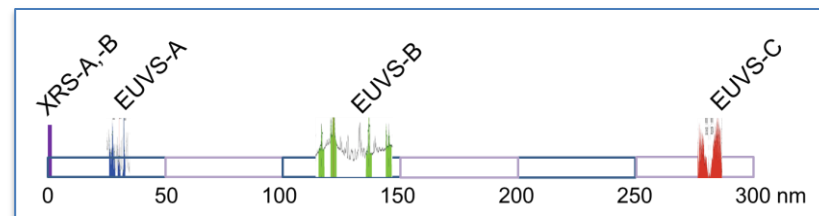


EXIS First Public Data Release

03-Feb-2017

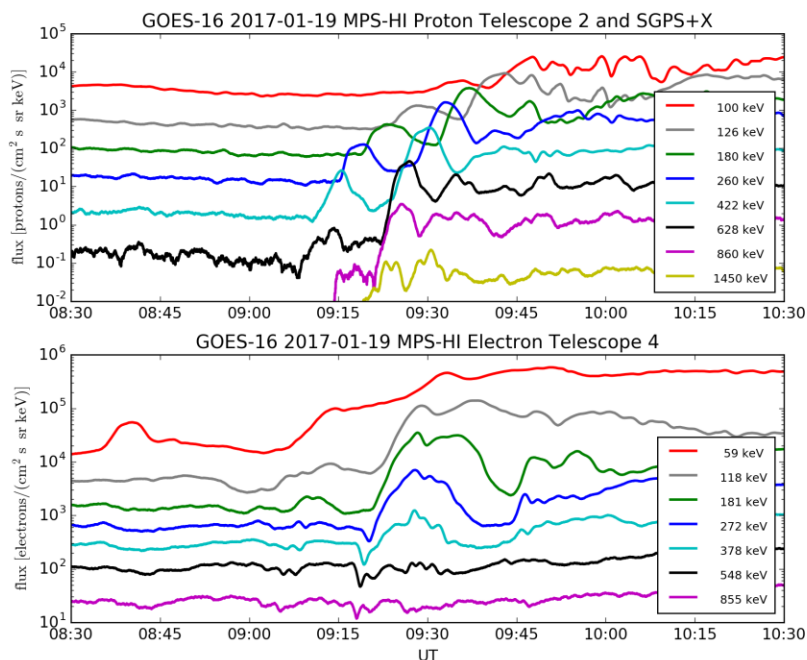


- Solar irradiance in X-rays and EUV
- Instrument Scientist: Janet Machol / NCEI
- Domain Scientist: Rodney Viereck / SWPC
- Built by CU/LASP
- Principal Investigator: Frank Eparvier



SEISS First Public Data Release

10-Feb-2017



- Instrument Scientist: Brian Kress / NCEI
- Domain Scientist: Terry Onsager / SWPC
- Support: Juan Rodriguez / NCEI
Thanasis Boudouridis / NCEI
- By Assurance Technology Corp (Carlisle, MA)

Magnetospheric Particle Sensor – Low Energy (MPS-LO)

ions⁺ 30 eV – 30 keV

e⁻ 30 eV – 30 keV



Magnetospheric Particle Sensor – High Energy (MPS-HI)

p⁺ 80 keV – 10 MeV

e⁻ 50 keV – 4 MeV; > 2 MeV



Solar & Galactic Proton Sensor (SGPS)

p⁺ 1 – 500 MeV; >500 MeV

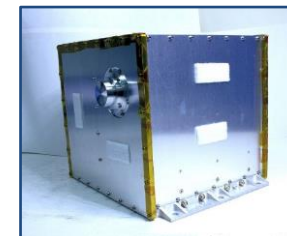
α⁺ 4 – 500 MeV



Energetic Heavy Ion Sensor (EHIS)

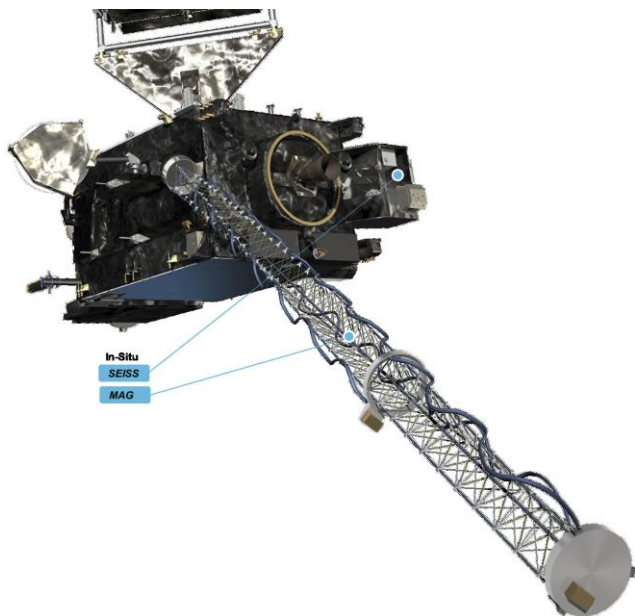
ions⁺ 10 – 200 MeV/nucleon

Specie⁺ H, He, Z 4-29

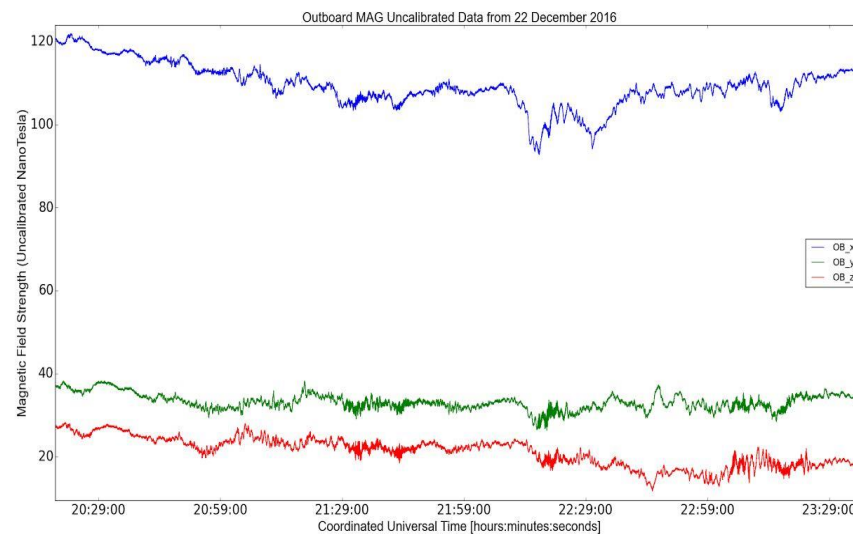


MAG First Public Data Release

04-Feb-2017

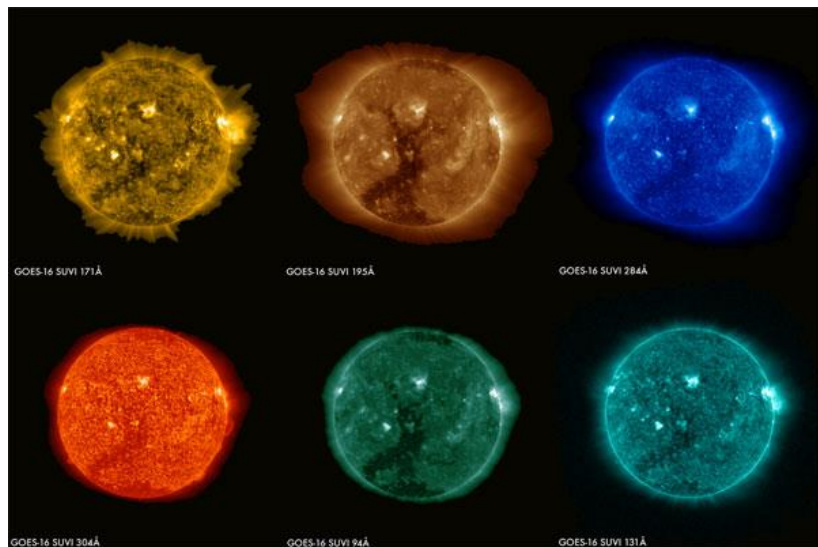


- Tri-axial Fluxgate Magnetometer
- Instrument Scientist: Paul Loto'aniu / NCEI
- Domain Scientist: Howard Singer / SWPC
- Support: Rob Redmon / NCEI
Sam Califf / NCEI
- Provider: Lockheed Martin (Littleton, CO)

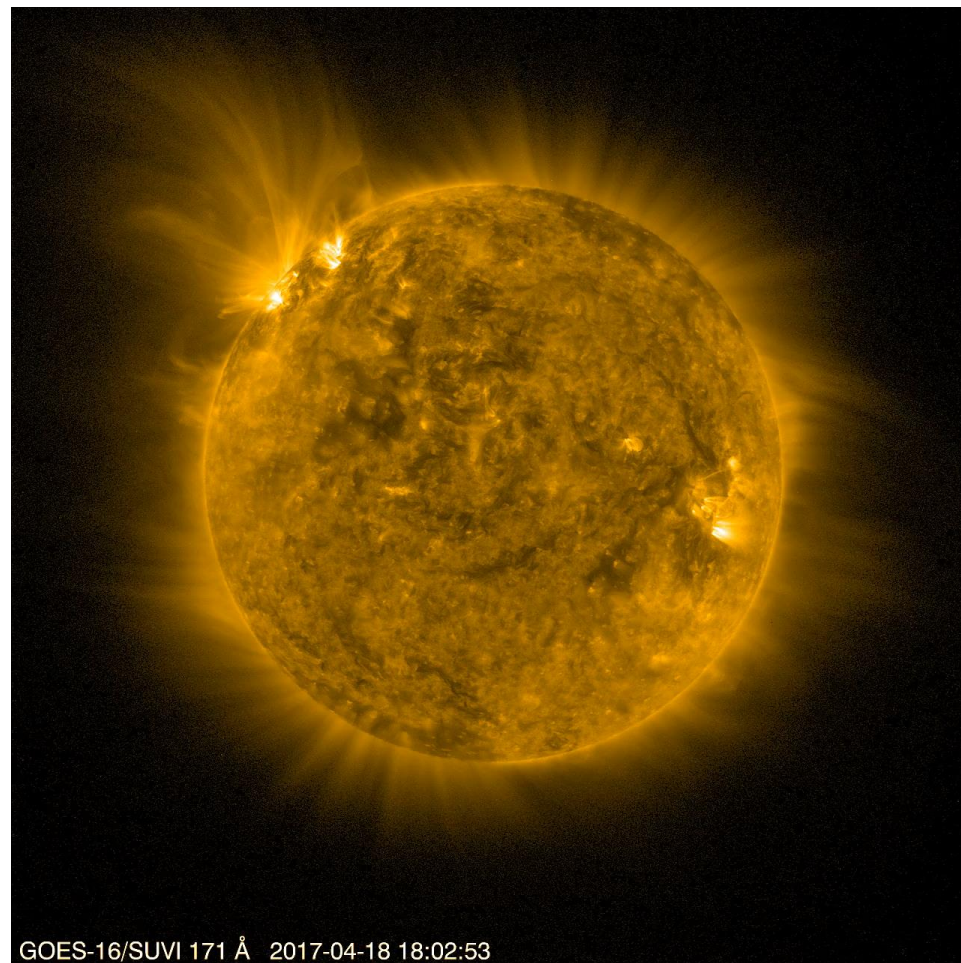


SUVI First Public Data Release

27-Feb-2017



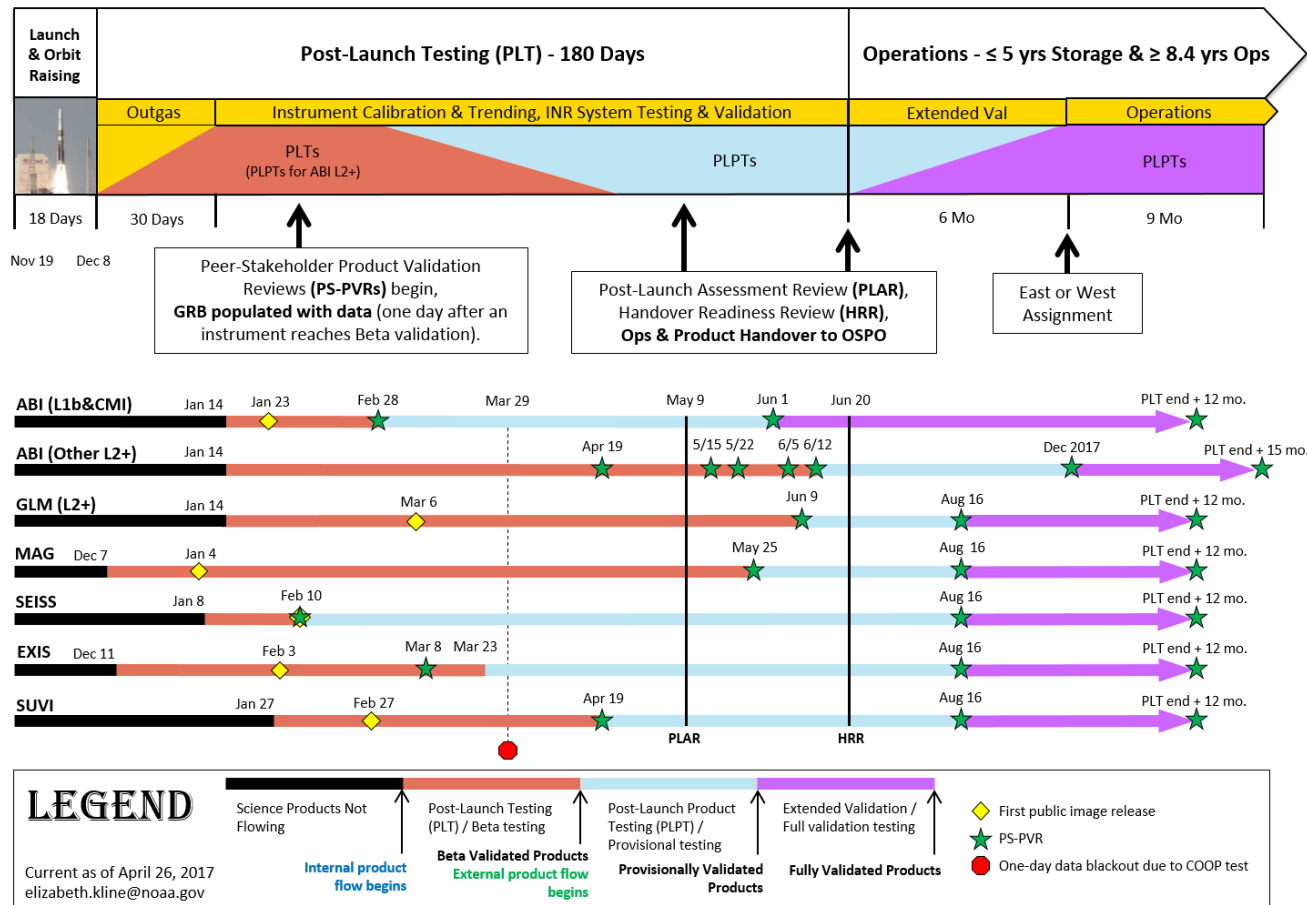
- Similar in design to the SDO AIA
- Instrument Scientist: Jon Darnel / NCEI
- Domain Scientist: Steve Hill / SWPC
- Support: Dan Seaton / NCEI
Larisa Krista / NCEI
- Built by LM-ATC (Palo Alto, CA)



Path to Operations

Current Post-Launch Testing

GOES-16 Post-Launch Science Product Validation Schedule



Note: All dates are coordinated with the Flight/MOST PLT SOE group and the T&H team and are subject to change.



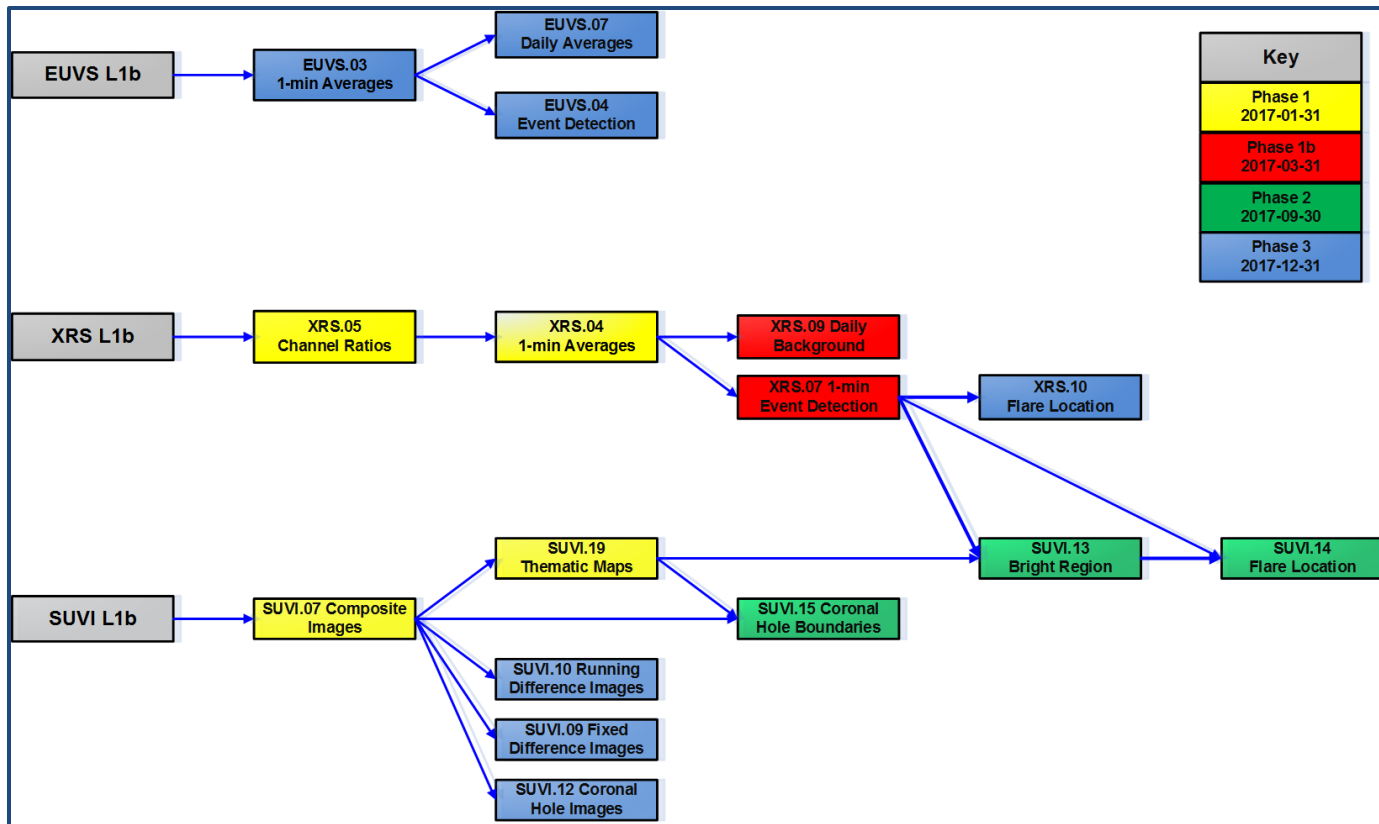
Data Availability (L1b Products)

August 2017

Instrument	Product	Product Description
EXIS	EUVS	Modeled solar irradiance spectra covering the wavelength range from 5 to 127 nm at a 30-sec. cadence. Also, the Mg II index and 7 individual EUV line measurement.
	XRS	Soft x-ray flux measurements at the traditional 2 XRS band passes at one-second cadence.
MAG	MAG	The 10 Hz estimated ambient magnetic field in four coordinate reference frames.
SEISS	EHIS	Five-minute fluxes of 10-200 MeV/nucleon heavy ions (Z=1,2,4-29) derived from in situ measurements of heavy ion count rates, in one look direction.
	MPS-LO	One-sec. fluxes of low energy (30 eV - 30keV) electrons and ions derived from in situ measurements of electron and ion count rates, in 14 look directions.
	MPS-HI	One-sec. fluxes of medium and high energy (50 keV - 4 MeV) electrons and (80 keV - 10 MeV) protons derived from in situ measurements of electron and proton count rates, in 5 look directions.
	SGPS	One-sec. fluxes of high energy (1 MeV - >500 MeV) protons derived from in situ measurements of proton count rates, in one look direction (two SGPS per satellite).
SUVI	SUVI	Solar images at six wavelengths and multiple radiance level ranges in support of viewing the sun during different types of solar activity. Image exposures are 10 msec or one sec.

Available via NCEI-CO and CLASS
(SWW Poster by Meg Tilton)

Data Availability L2+ Products After CY2017



Real-time Data Available via NWS/SWPC
(SEISS and MAG L2+ Products Not Shown)



Data Access

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html>

File Edit View History Bookmarks Tools Help

Access My Account | Email | On | XFINITY Connect: Inbox | Search | re3data.org | New Tab | GOES-R Space Weather | NCEI

https://www.ngdc.noaa.gov/stp/satellite/goes-r.html

Most Visited Getting Started

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NOAA > NESDIS > NCEI (formerly NGDC) > STP > Space Weather

Satellite Data Home Data Access Documentation comments | privacy policy

GOES-R Space Weather

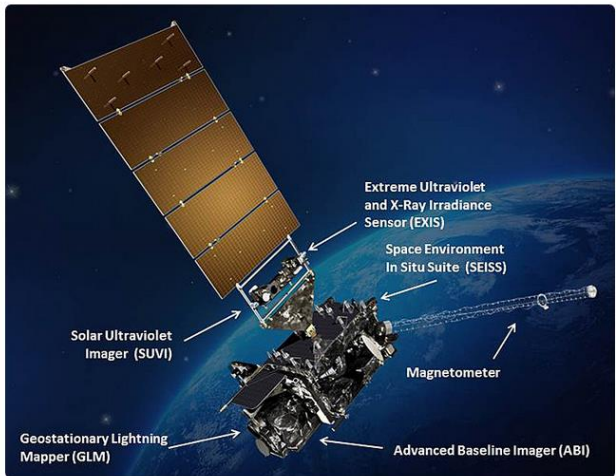
GOES-R, or GOES-16, the first satellite in the GOES-R series, launched on November 19, 2016. For 6-12 months after launch the satellite will be in post-launch testing as NCEI scientists and others will check and validate GOES-R data products.

Instruments on the new GOES-R satellite will collect three times more data and provide four times better resolution of images of events taking place above Earth's surface...
[more in news](#)

Alert me when data becomes available:
☒ Send Us Your Email

Resources

- GOES-R Mission
- GOES-R Series Products Overview
- NOAA Space Weather Prediction Center



Space Weather Instruments & Products

Instrument	Product	Description
	1-min EUVS Averages	Averages of 30-second EUVS data
	EUVS Daily Averages	Daily averages of EUVS data
	EUVS Event Detection	EUVS detection of solar flares
	1-second Irradiance	Irradiance values with corrected timestamps
EXIS: Extreme Ultraviolet (EUVS) and X-ray Irradiance (XRS) Sensors	1-min XRS Averages	Original observations are at variable cadence and can be up to 0.1 Hz

Start | 6:29 AM 5/3/2017



NCEI Points of Contact (POCs)

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William.Denig	Program Lead	Rob.Redmon	MAG Support
William.Rowland	Systems Engineer	Margaret.Tilton	Data Manager
Janet.Machol	EXIS Instrument Scientist	Jonathan.Darnel	SUVI Instrument Scientist
Brian.Kress	SEISS Instrument Scientist	Paul.Lotoaniu	MAG Instrument Scientist
Juan.Rodriguez	SEISS Support	Athanasios.Boudouridis	SEISS Support
Daniel.Seaton	SUVI Support	Sam.Califf	MAG Support
Abram.Claycomb	S/W Support	Vicki.Hsu	S/W Support
Stefan.Codrescu	S/W Support	Larizsa.Krisa	SUVI Support

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